

# 2002 Plan to Integrate Land Information



Wisconsin Department of Agriculture, Trade and Consumer Protection  
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**2002 Plan to Integrate Land Information**

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## I. EXECUTIVE SUMMARY

This plan is submitted by the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP). The preparation of this plan was coordinated by:

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The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) is required by statute (Wis. Stat. Sec. 16.967(6)) to provide an annual plan to integrate land information to the Wisconsin Land Information Board (WLIB). DATCP's plan to integrate land information summarizes land information activities related to individual programs.

Several DATCP programs collect, use, maintain, and share land information. DATCP's programs are responsible for funding their specific land information activities, and most of DATCP's land information exists in a paper or relational database format. GIS technology is not centralized within DATCP at this time. The agency's Agricultural Resource Management (ARM) division first acquired GIS technology in 1992, and is the only one of DATCP's five divisions to use these tools and data regularly for program and resource management applications. The department's other divisions have begun to use GIS technology and DATCP is considering the development of agency-wide capability.

DATCP does not create statewide base layers of land information (e.g., hydrography, roads, parcels, legislative districts), but acquires many of these layers from other sources, especially state agencies. The ARM division uses ArcInfo and ArcView products to create GIS data layers for its programs, for other DATCP divisions, and for joint projects with external customers as resources allow.

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The ARM division has received an EPA grant to develop an interactive site to provide information to the public on sites contaminated with Lead Arsenate. The overall goal of this project is to locate sites statewide that are contaminated with Lead Arsenate and to implement a system that provides this data to the public via the Internet.

DATCP representatives are active on many land information and GIS related committees and work groups. By statute, DATCP representatives serve on the WLIB and the Wisconsin Land Council (WLC). DATCP works with other federal, state, county, and local agencies, utilities, interest groups, and private sector to coordinate many activities to achieve common land information modernization and integration goals.

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## II. THE FIVE TECHNOLOGY ARCHITECTURES

### A. Applications Architecture

DATCP has a number of environmental management applications, which utilize land information and GIS. These applications use GIS technologies in their daily decision-making and long-term planning policies. Many of these programs coordinate their GIS needs with the ARM which maintains the Department's GIS. The programs listed below use land information and/or GIS technology to meet their program needs.

Agrichemicals in Groundwater: The ARM division has databases and GIS data sets relating to pesticides and nitrate in Wisconsin's private drinking water wells and DATCP's monitoring wells.

Pesticide Management Areas and Use Prohibition Areas: The ARM division maintains databases and GIS data sets for pesticide management areas and pesticide use prohibition areas in Wisconsin.

Regulatory Compliance at Agrichemical Sites: The ARM division maintains information about regulated agrichemical customers and sites. These are sites where division staff conduct sampling, inspections, investigations, licensing and other compliance activities.

Lead Arsenate Program: The ARM division has responsibility to identify former orchard locations where lead arsenate concentrations in soil may pose a health hazard. The division plans to implement an Arc Internet Map Server (ArcIMS) to provide this information to the public in the future.

Landscape Application Program: The ARM division administers the Landscape Application Program, which collects data about pesticide applications to lawns and landscapes.

Endangered Species: The ARM division has responsibilities for developing pesticide management plans for endangered species and their habitats. Staff work with landowners and managers to develop these plans, which promote modified pesticide use and application methods or alternative pest control. Program activities are coordinated with the U.S. Fish and Wildlife Service (US FWS), DNR, the Nature Conservancy, the University of Wisconsin-Extension (UWEX), and others.

Farmland Preservation Program: This program tracks property owners eligible for farmland preservation tax credits through (1) an individual farmland preservation agreement/contract with DATCP or (2) an exclusive agricultural zoning ordinance at the local or county level. The ARM division coordinates this program with the

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Wisconsin Department of Revenue (DOR), which administers the tax credit portion of the program.

Conservation Reserve Enhancement Program (CREP): The CREP is a program authorized under the federal farm bill. The program allows states to submit an application to enroll up to 100,000 acres of land with up to \$200 million in federal funds from the Commodity Credit Corporation (CCC).

Drainage Districts Program: DATCP requires every drainage district in Wisconsin to submit maps of drains along with ditch profiles. Landowners are responsible for maintaining drains.

Agricultural Impact Program: The ARM division prepares required agricultural impact statements on public projects and has custodial responsibilities for the final reports generated by its assessments.

Nurseries and Christmas Trees: ARM division staff inspect and certify that Wisconsin's nursery stock and Christmas trees are free from pests and diseases prior to export out of the state. The Nursery program maintains databases and GIS data sets for management purposes.

Gypsy Moth Program: The ARM division monitors and controls gypsy moth occurrences in Wisconsin. The Gypsy Moth program uses GIS and GPS technology to track gypsy moth movement in Wisconsin. The program coordinates data collection and analyses with the U.S. Forest Service (USFS), the federal Animal and Plant Health Inspection Service (APHIS), DNR, and UW-Madison.

Pest Survey Program: The ARM division is responsible for the monitoring of regulated pests. Surveys are conducted to identify the incidence and severity of plant disease and pest outbreaks, pest population levels and trends, and to discover new diseases or exotic pests.

Potato Rot Nematode Program: The ARM division is responsible for inspecting harvested potato crops for nematode infestations. Potatoes must be certified nematode free to be used for seed purposes. Inspections are conducted at fields going into seed production for the first time and at fields already infested.

Animal Health Program: DATCP's Animal Health Program enforces laws to control serious diseases of domestic animals and livestock, to ensure humane treatment of animals, and to protect human beings from animal diseases.

Food Safety Program: DATCP's Food Safety program enforces Wisconsin's food safety laws to ensure that the public food supply is safe and wholesome. The program regulates the entire food chain, from points of production to points of retail sale and consumption. Program staff investigate deceptive food advertising

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and labeling practices and licenses and inspects many types of food handling and distribution facilities such as dairy farms, food warehouses, retail food establishments, food-processing plants, egg producers, breweries, and bulk milk tankers.

Trade and Consumer Protection Programs: DATCP's Trade and Consumer Protection division enforces major consumer protection laws, including those related to deceptive advertising, unfair business practices, weights and measures fraud, and consumer product safety. The division investigates consumer complaints of possible law violations and administers compliance and enforcement programs, and samples products for suspected safety hazards to ensure consumer product safety.

Wisconsin Agricultural Statistics Service (WASS): WASS is a cooperative effort between the USDA and DATCP. This state/federal statistics service collects information about agricultural production, and provides analyses related to a broad range of agricultural issues. WASS also performs special statistical surveys, analyses and consultation services related to agriculture, trade and consumer protection issues. WASS staff collect data from sample individuals across the state for agricultural analyses. The USDA analyzes these data to produce nationwide estimates of agricultural production, inventories and prices. WASS publishes statistics by county or WASS districts, which are aggregates of counties. The original data collected from individuals is confidential, while aggregated data is available to the public. USDA has custodial responsibilities for the majority of this information. Statistical analyses for a variety of agricultural activities such as crop production, number of livestock, and milk production are published annually by county in *Agricultural Statistics*. In addition, WASS publishes special reports related to specific topics. For example, the *Pesticide Use Report* is published once every five years and contains information by WASS district about crop acres, pesticide and nutrient use, and pesticide application methods. WASS is investigating the use of GIS tools to help in its data analyses and publication functions.

### **B. Information Architecture**

Land information at DATCP is housed in SQL and Microsoft Access databases and in a GIS. Each division is responsible for gathering and entering information into databases and for maintaining the integrity of the database. The Bureau of Information Technology Systems (BITS) assumes the responsibility for maintaining and updating the servers where these database applications reside. Any new database application must meet specific standards developed by BITS.

DATCP is in the process of developing resources to better distribute its data sets. Currently, the DATCP website has images of maps available for viewing but no data sets

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are available for download. Some of these GIS layers are available for distribution via request however. These files can be distributed by CD-ROM, zip disk, or can be emailed to the requestor depending on file size. In the future, the department plans to make data sets and corresponding metadata available for download via the Internet. Below is a list of land information data sets DATCP has developed within the agency.

- *Private Drinking Water Wells:* The ARM division compiles well information and sample results from many different sources such as its own sampling efforts, DNR's Groundwater Retrieval Network (GRN), pesticide manufacturer's and other federal, state, and local groundwater sampling initiatives. In most cases, PLSS descriptions for wells are used to generate WTM coordinates based on tables of PLSS unit centroids acquired from DNR. The Wisconsin Unique Well Number (WUWN) can be used to link attribute data to GIS well points. Water Quality Program staff produce statewide GIS data layers and metadata for private wells tested for atrazine and nitrate.
- *Monitoring Wells:* The ARM division maintains several networks of groundwater monitoring wells. DATCP reports construction log data generated during well installation to DNR as required by statute. The ARM division is the custodian of monitoring site and sample data for its projects.
- *Atrazine Use Prohibition Areas:* The ARM division has custodial responsibility for maintaining database and GIS data sets of atrazine use prohibition areas in Wisconsin. Water Quality Program staff produce annual statewide data and GIS layers along with metadata of atrazine use prohibition areas digitized from USGS 1:24,000-scale topographic maps.
- *Agrichemical Sites:* The ARM division is the custodian of information about regulated agrichemical customers and sites. The types of sites tracked include farms, greenhouses, spill areas, nurseries, feedlots, commercial businesses, parks airports, golf courses, residential properties, landfills and dumps, soil and groundwater remediation sites and others. Locational information about these sites is stored in a SQL database and ranges from addresses to PLSS information. Field staff are currently in the process of collecting coordinates for actively licensed pesticide business locations, pesticide dealers, feed manufacturers and fertilizer manufacturers using GPS technology.
- *Endangered Species:* The ARM division has custodial responsibilities for pesticide management plans for endangered species and their habitats. ARM division staff use DNR's Natural Heritage Inventory database to locate endangered and threatened species occurrences, and

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then collect and maintain program data, including PLSS locations or GPS coordinates, related to these sites. GIS layers are created and maintained using this information. All of DNR's and some of DATCP's related data are confidential.

- *Gypsy Moth Treatment Sites and Trap Locations:* The gypsy moth program sets traps statewide each year and records trap locations using GPS technology. GIS layers of trap locations and treatment sites are then created. The Plant Industry bureau has custodial responsibilities for this data.
- *Nurseries and Christmas Trees:* The Plant Industry bureau also has custodial responsibilities to maintain database and GIS data sets for licensed nurseries and Christmas Tree plantations. GIS layers are created from this information by using address information and PLSS descriptions.
- *Farmland Preservation:* The ARM division has custodial responsibility for all data necessary to administer Wisconsin's Farmland Preservation Law. Staff track property in this program by tax parcel identifier and PLSS, and maintain a statewide GIS layer of exclusive agricultural zoning authorities by county, town, and municipality.
- *CREP:* The ARM division has custodial responsibility for all data necessary to administer Wisconsin's CREP. Staff track properties enrolled in this program by collecting coordinate data of easements using GPS receivers.

DATCP does not have any of its own technical standards or policies for collection of land information or metadata. The agency currently refers to *DNR's Locational Data Standards – version 1.1* for its locational information standards. All metadata created by DATCP is developed to meet the Federal Geographic Data Committee's (FGDC) metadata standards. Currently, DATCP uses a Microsoft Word template for creating metadata because of the small number of GIS data sets that the department creates and maintains. In the future, metadata software will be explored as a means to develop and maintain metadata.

Several DATCP programs have an ongoing need for land information from various sources to support many different applications. DATCP acquires this information from federal, state, regional, county, and local agencies, and other sources as needed. Acquired data come in a variety of formats including paper reports, paper maps, text files, spread sheets, databases, and GIS data layers. The ARM division acquires most of

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its GIS data sets from other state agencies, primarily the DNR. Below are some examples of land information acquired by DATCP programs.

- Construction plans, paper maps and reports for Wisconsin Department of Transportation (DOT) or utility projects assessed by DATCP's Agricultural Impact Program;
- Paper maps, plans and other documentation from county drainage boards for compilation by DATCP's Drainage Program;
- Numerous GIS data sets from DNR and other agencies, including statewide base layers such as county boundaries, hydrography, state trunk highways, legislative districts, and land cover;
- Dane County water table paper maps and GIS data sets from the Wisconsin Geological and Natural History Survey (WGNHS); and
- Portage County private well database and GIS data layers from the Portage County Planning and Zoning Office and the University of Wisconsin – Stevens Point (UWSP) Central Task Force Laboratory.

Programs can usually acquire most land information they need but some problems may occur in the acquisition process. When problems occur they usually fall in one of the categories below.

1. Land information does not exist. Several statewide data sets that would be very useful to DATCP's regulatory and oversight programs are simply not available at this time. Examples of desired data sets include statewide soil survey, statewide land parcel data, statewide geology data, statewide hydrogeology data, and statewide Digital Ortho Photos (DOP's).
2. Lack of Standards. The lack of standards for data models, data formats, and data transfer can create problems for DATCP staff attempting to acquire and use land information from other sources. These problems include the inability to read data from a variety of media (e.g., tapes, diskettes, e-mail attachments), Internet connection and security issues, and the time spent manipulating acquired data so it can be used by DATCP programs.

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### **C. Technology Architecture**

DATCP's current GIS architecture was designed to meet the needs of the ARM division and the occasional needs of the department's other divisions. The system does not have the hardware, software, or support necessary to handle the needs of the entire agency. The current system is becoming outdated and needs to be updated. Below is a list of hardware and software that make up the division's GIS.

#### Hardware:

- Sparc 20 Unix workstation with Sun Solaris operating system
- Ultra 1 Unix workstation with Sun Solaris operating system
- Omni Tech PC with Windows NT operating system

#### Software:

- Arc/Info 8.1 for Unix workstations (2 node lock licenses)
- Arcview 3.1 for Unix workstations ( 2 licenses)
- Arcview 3.2 for Windows NT (1 license)

#### Peripherals:

- Hewlett Packard (HP) Scanjet 5300 document scanner
- HP DeskJet 1220C printer
- HP DesignJet 1050C Plus large format plotter
- Altek large format digitizing table

#### GPS:

- Trimble GeoExplorer II GPS receivers (12 units)
- Magellan 315 GPS receivers (17 units)

The agency plans to review its GIS needs to gain a better understanding future agency needs. The number of programs that could utilize GIS technology is steadily increasing and the current GIS architecture will not be able to effectively handle their needs. The agency will determine what upgrade path needs to be taken to improve its GIS capacity in order to make GIS accessible to everyone. This process will take time because of the limited number of resources available to accomplish this task. Currently, the ARM division is in the process of conducting a pilot project that will involve the use of ESRI's ArcIMS software. The project will be developed for access through the department's Intranet site. Once the system is thoroughly tested, the division will explore possible methods for serving the data to the public over the Internet.

### **D: Organizational Architecture**

DATCP's human resources in Information Technology (IT) reside in BITS with the exception of two GIS staff members who work in the ARM division. These two staff

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members are responsible for maintaining the GIS. Therefore, limited resources are required on behalf of BITS staff for the ongoing maintenance of the GIS.

The future of GIS at DATCP is a priority issue of management. As the agency reviews its GIS needs, it will decide what human resources will be needed to improve GIS accessibility. To help make these decisions, the agency will be forming a GIS user's group made up current and future users of GIS technology. This group will provide important insight into departmental GIS needs. As more staff become users of GIS technology, the department will also have to develop guidelines and standards for data creation, use and sharing.

Currently, staff who require training must be trained by outside sources. No onsite training is provided due to the small number of staff who use GIS technology. As more and more staff become GIS users, the department will consider onsite training.

### **E. Security Architecture**

DATCP uses standard database administration practices, such as password-protected logins, to establish secure systems as appropriate. Although the ARM division's GIS workstations are nodes on the DATCP network, ARM division staff are responsible for maintaining and administering GIS related equipment, data and software. ARM division and other division staff also maintain and administer many land information related database applications. For example, the ARM division requires password-protected logins, performs regular backups of GIS data to tape, and uses other security measures to protect its GIS data sets and related data.

Wisconsin's Open Records regulations and other external and internal policies with respect to public versus private data, guide DATCP like other state agencies. DATCP and some of its divisions have formalized their data privacy policies. The ARM division, for example, has written the *ARM Division Open Records Policy*, parts of which specify which data are available under open records and which data are not. The ARM division also provides access to its data in existing format, and may charge a fee for printed or copied maps. DATCP's cost recovery for data requests is based on time and materials involved in the request, and may include fees for staff salaries, computer time, supplies, postage and shipping, and other expenses. In many cases, DATCP program staff have developed informal data sharing arrangements with land information partners and customers.